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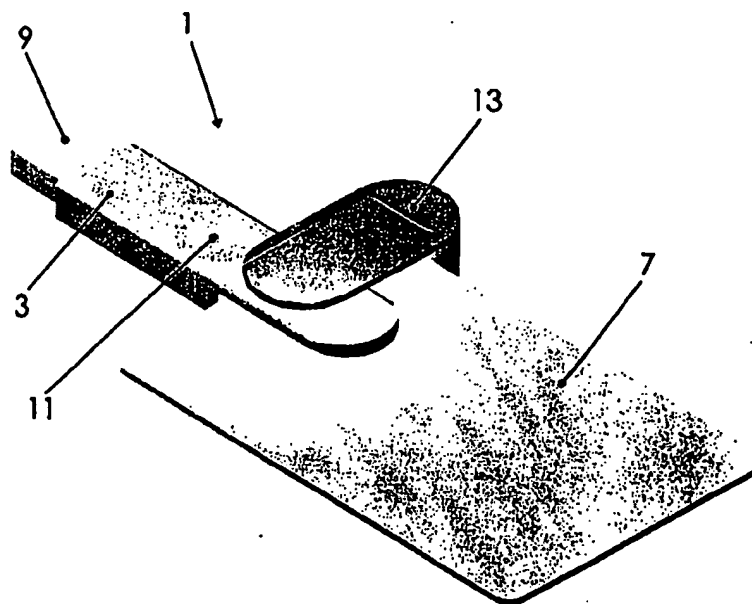
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PORTABLE READER FOR SMART CARDS



(57) Abstract: A portable reader (1) for smart cards (7) is described that comprises: a support body (3) containing at least one slot (5) for inserting and reading a smart card (7); interface means (9) connected to the support body (3); interface means (9) connected to the support body (3); means (13) for keeping and aligning the smart card (7); and a managing microprocessor contained inside the support body (3) and connected to the interface means (9) and the reading means for smart cards (7).

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PORTABLE READER FOR SMART CARDS

The present invention refers to a portable reader for intelligent cards of the type commonly known as "smart cards".

Smart cards are nowadays rather widespread given their practical easiness of use: in fact, they allow, through microprocessors realised on integrated circuit chips obtained therein, to store a very high amount of data and therefore they can be used in applications such as different types of credit cards, cryptographic cards and future applications such as identity cards or electronic health cards.

For the purpose for which they are provided, such smart cards are adapted to communicate (that is, to transmit and receive) data through communication standards that are well-known at world level, such as the 7816 Standard. To realise such communication, the intelligent card is put in contact with a card reading device, which is equipped with suitable slots in which the card is

inserted, such slots containing a certain number of contacts that read the card data and communicate them to the microprocessor managing the card reader. Card readers are currently available on the market that are realised in the shape of boxes whose sizes are about 15 x 10 cm, that are statically connected to different types of data processing and transmitting systems. Such smart card readers are therefore with a relatively high encumbrance and due to their nature they are provided fixed in well-defined positions. On the market, there are currently no smart card readers that are portable and with small sizes.

Object of the present invention is solving the above prior-art problems, by providing a portable reader for smart cards that is of very reduced sizes and therefore can be easily transported and used by end users for any type of application.

A further object of the present invention is providing a portable reader that is equipped with such interface means as to allow it to widely and immediately use all smart cards with which a user can be equipped: for such purpose, the reader is equipped with means allowing it to be connected to a common Universal Serial Bus (USB) port of a

computer.

The above and other objects and advantages of the invention, as will appear from the following description, are obtained by a portable reader for smart cards as claimed in Claim 1. Preferred embodiments and non-trivial variations of the present invention are claimed in the dependent Claims.

The present invention will be better described by some preferred embodiments thereof, given as a non-limiting example, with reference to the enclosed drawings, in which:

- Figure 1 is a perspective view of an embodiment of a portable reader according to the present invention coupled with a smart card in the operating position;
- Figure 2 is a perspective view of the reader in Fig. 1 in the transport position;
- Figure 3 is a top view of the operating configuration in Fig. 1; and
- Figure 4 is a top view of the reader in Fig. 2.

With reference to the Figures, a preferred embodiment of the portable reader 1 for intelligent cards is shown, such cards being commonly known as

"smart cards".

The portable reader 1 for smart cards of the present invention substantially comprises a support body 3 shaped as an elongated box, comprising at one end thereof at least one slot 5 for inserting and reading therein a smart card 7. For such purpose, the slot 5 is equipped with reading means (not shown) for smart cards 7, that are commonly known and are composed of a plurality (usually six) of contacts that carry connection wires to a managing microprocessor (also not shown) contained inside the support body 3.

Such managing microprocessor is preferably realised through an integrated circuit chip and contains inside it all the necessary logics for receiving and transmitting data to the smart card 7 to which it is connected.

In order to communicate with the outside world the data obtained from a connected smart card 7, the portable reader 1 of the invention is further equipped with interface means 9 connected to the support body 3 and to the managing microprocessor; commonly, such interface means 9 are adapted to be connected to a common USB port of a computer, in order to be able to realise a connection with the

most widely known external managing networks (Internet, Intranet, etc.).

Moreover, the portable reader 1 of the invention comprises means 13 for keeping and aligning the smart card 7, that, in the practical embodiment shown, are composed of a bracket shaped as an elongated C and hinged to the support body 3 in order to have:

- a) an operating position in which the keeping and aligning means 13 are perpendicular to the support body 3 to keep the card 7 in contact with the reader 1 and to align the card 7 with the reading means (as can be clearly shown in Fig.s 1 and 3; and
- b) a rest position in which the keeping and aligning means 13 are aligned with the support body 3 allowing to transport and store the reader 1 (as can be clearly seen in Fig.s 2 and 4).

Finally, the portable reader 1 of the invention can be further equipped with means 11 that enable grasping the support body 3 by means of two fingers of an hand, such as for example the depression 11 shown in the different Figures.

A portable reader 1 has thereby been realised

that can be placed and stored in any suitable place and that can be easily transported and connected to USB ports: in this way, by arranging a reader whose overall sizes are on the order of 3 cm, it is possible to realise a flexible solution wherein each smart card with which a user is equipped can be immediately and easily connected and activated for the outside world to perform flexible and powerful applications.

Some preferred embodiments of the invention have been disclosed, but obviously they are subjected to further modifications and variations within the same inventive idea. For example, the reader 1 of the invention can be realised on a personal identification device like the one marketed by the Assignee of the present invention, containing in a single configuration the functionalities of personal identification, encrypted data transmission and smart cards reading. Otherwise, the reader 1 of the present invention can be pre-arranged in a stand-alone configuration according to application needs, guaranteeing at any rate an efficient solution as regards the practical comfort of the shape and portability of the reader 1 itself.

CLAIMS

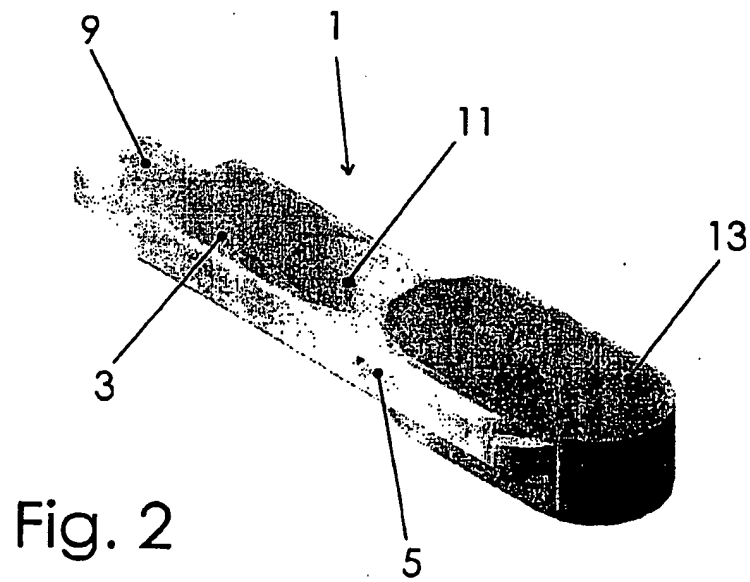
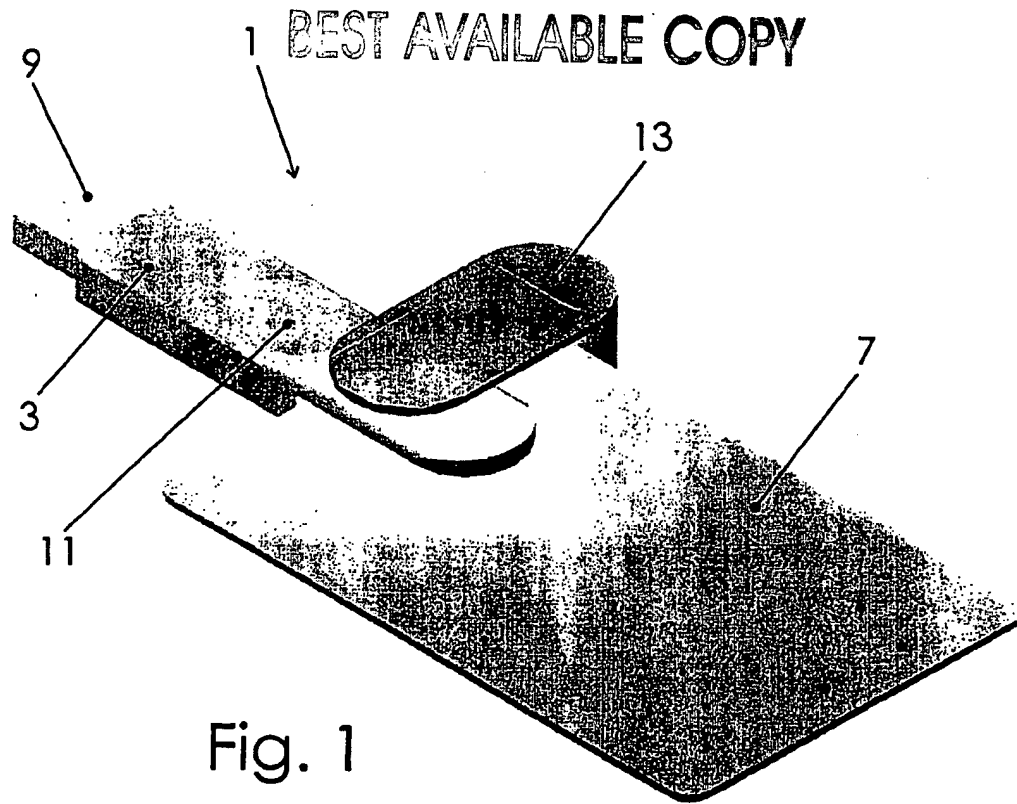
1. Portable reader (1) for smart cards (7),
characterised in that it comprises:
 - a support body (3) containing at least one slot (5) for inserting and reading a smart card (7), said slot (5) being equipped with reading means for smart cards (7);
 - interface means (9) connected to said support body (3);
 - means (13) for keeping and aligning said smart card (7); and
 - a managing microprocessor contained inside said support body (3) and connected to said interface means (9) and said reading means for smart cards (7).
2. Portable reader (1) according to Claim 1, characterised in that said interface means (9) are adapted to be connected to an USB port.
3. Portable reader (1) according to Claim 1, characterised in that said reading means for smart cards (7) are composed of a plurality of contacts carrying connection wires to said managing microprocessor.
4. Portable reader (1) according to Claim 3,

characterised in that said contacts are equal to six.

5. Portable reader (1) according to Claim 1, characterised in that said keeping and aligning means (13) are composed of an elongated-C-shaped bracket, said bracket being hinged to said support body (3) in order to have:

- a. an operating position in which said keeping and aligning means (13) are perpendicular to said support body (3) to keep the card (7) in contact with said reader (1) and to align the card (7) with said reading means; and
- b. a rest position in which said keeping and aligning means (13) are aligned with said support body (3) allowing to transport and store said reader (1).

6. Portable reader (1) according to Claim 1, characterised in that it is further equipped with means (11) that enable grasping said support body (3) by means of two fingers of an hand.



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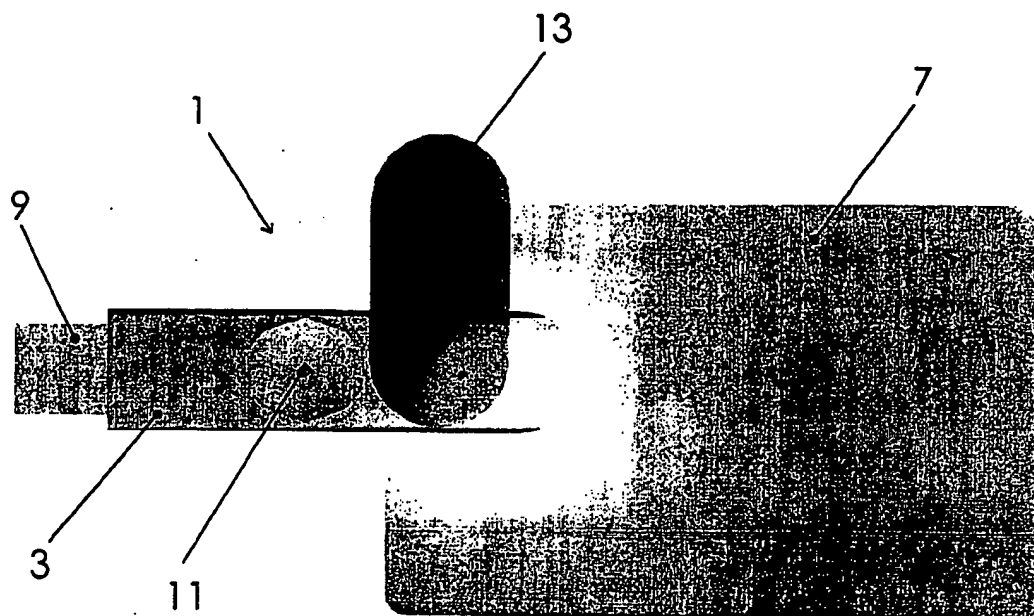


Fig. 3

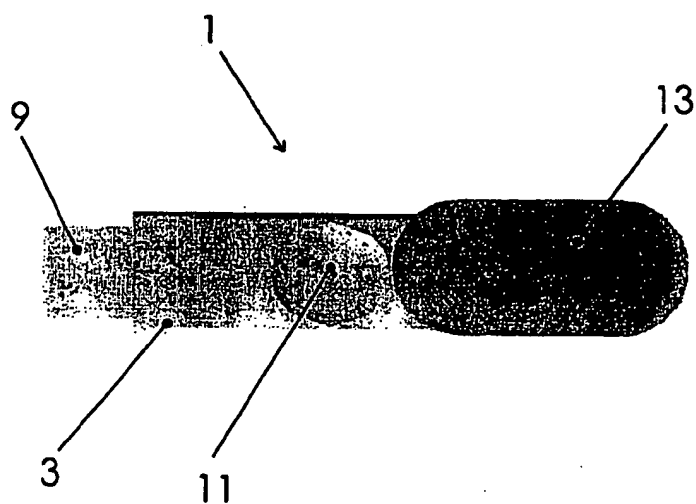


Fig. 4

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G06K7/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06K 606F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	US 5 778 071 A (AMORUSO VICTOR P ET AL) 7 July 1998 (1998-07-07) column 2, line 24 - line 47 column 3, line 6 - line 8 column 6, line 62 -column 7, line 20 figure 1C	1,3,4,6
X	US 5 844 497 A (GRAY ROBERT J) 1 December 1998 (1998-12-01) column 3, line 36 -column 5, line 48 figures 1,2	1,3,4,6

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

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PCT/IT 00/00429

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

Interns 1/ Application No

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